CHAPTER 2

DESCRIPTION OF THE SOUTH FORK FORKED DEER RIVER WATERSHED

2.1 BACKGROUND. Originally called Okeena, the Forked Deer River was renamed in the 1780s when surveyors noticed that the branches flowing into the Mississippi River favored a deer's forked antlers. Sighting of a deer with deformed antlers convinced the surveyors to keep the name.

The South Fork Forked Deer Watershed includes low-gradient streams with sandy bottoms and silty substrates. Some streams in the watershed have increased gradient and small areas of gravel substrate that create distinct aquatic habitats. Unique, isolated fish assemblages are also found in this region.

This Chapter describes the location and characteristics of the South Fork Forked Deer River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The South Fork Forked Deer River Watershed is located in West Tennessee and includes parts of Chester, Crockett, Dyer, Haywood, Henderson, Lauderdale, Madison, and McNairy Counties.

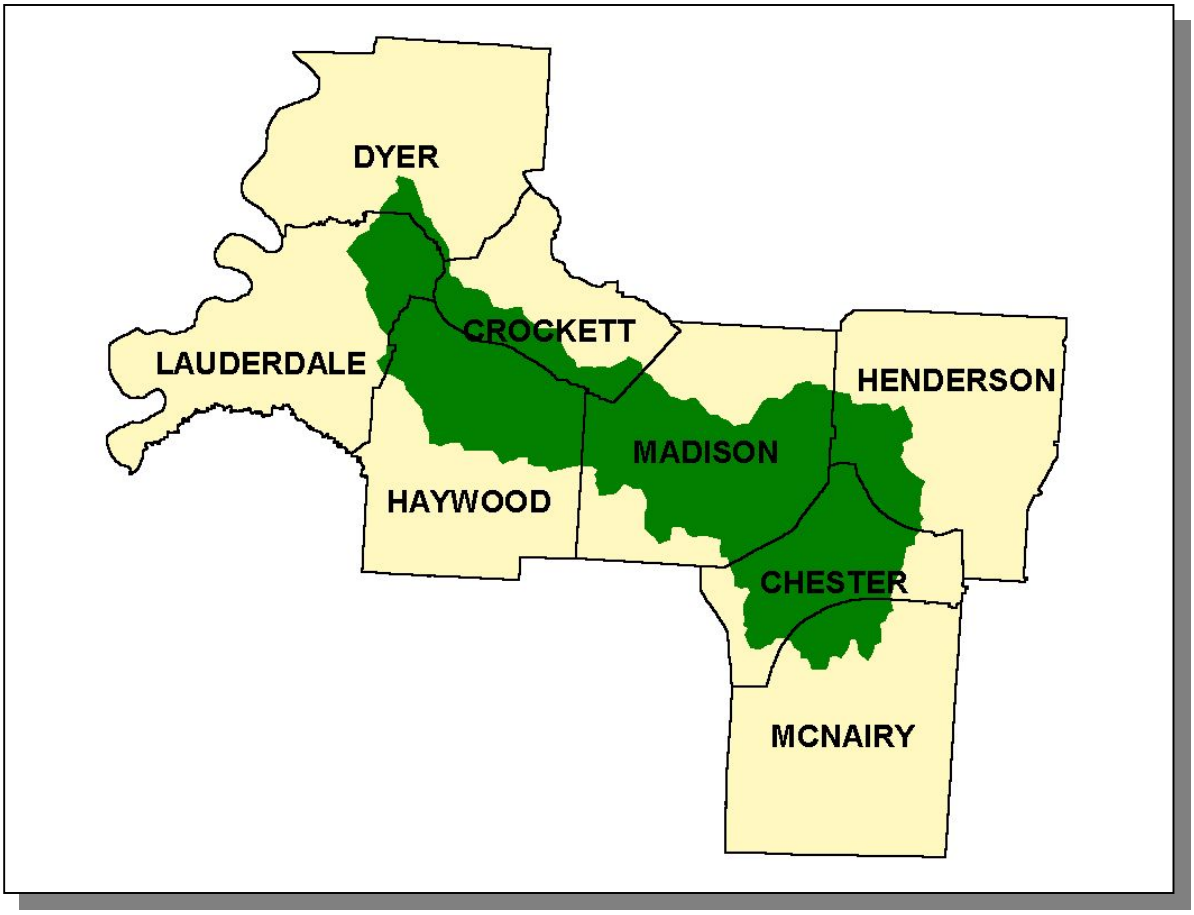

Figure 2-1. General Location of the South Fork Forked Deer River Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Madison	31.9
Haywood	20.7
Chester	17.9
Crockett	8.0
Henderson	7.9
Lauderdale	7.3
McNairy	4.6
Dyer	1.7

Table 2-1. The South Fork Forked Deer River Watershed Includes Parts of Eight West Tennessee Counties.

2.2.B. Population Density Centers. One interstate (I-40) and seven state highways serve the major communities in the South Fork Forked Deer River Watershed.

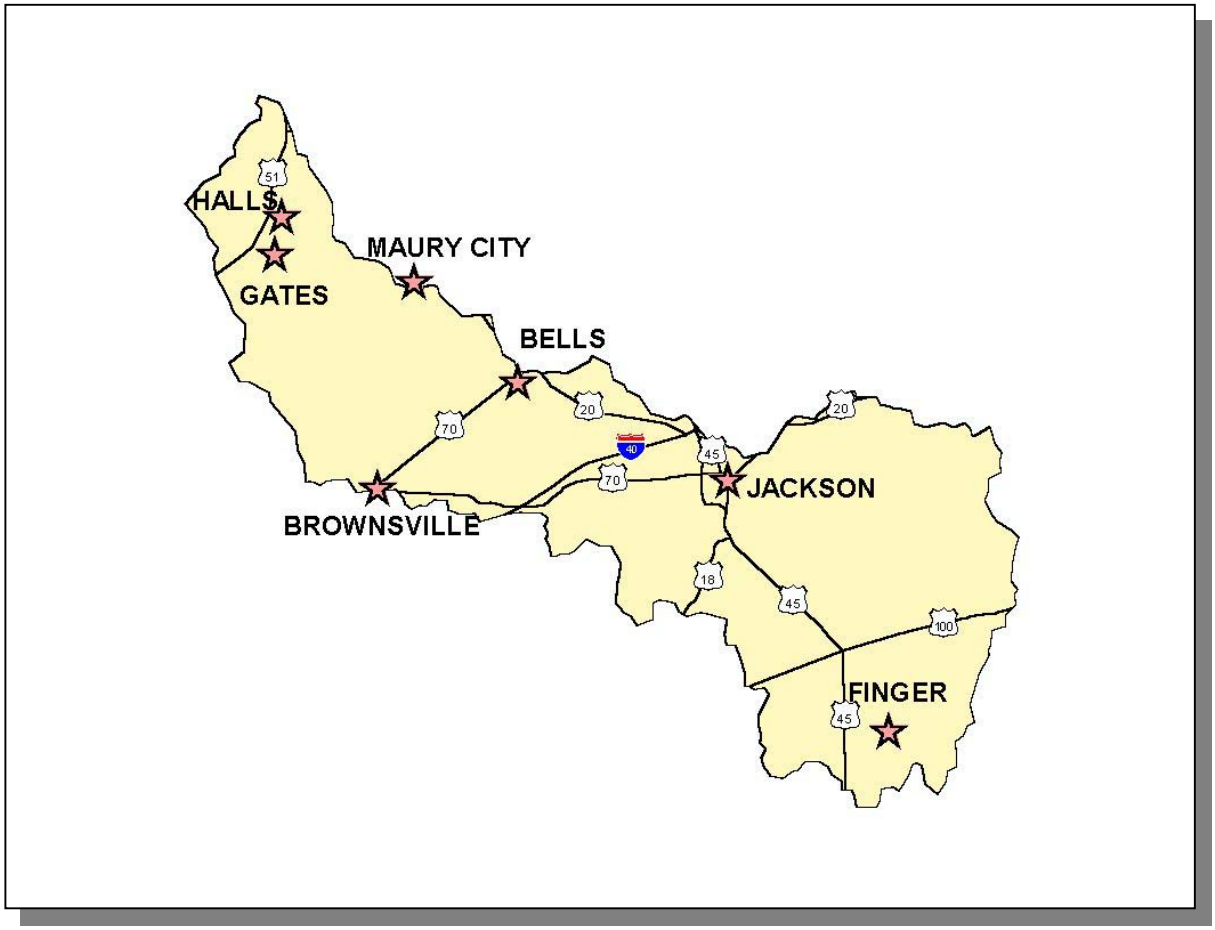

Figure 2-2. Municipalities and Roads in the South Fork Forked Deer River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Jackson*	48,949	Madison
Brownsville*	10,019	Haywood
Halls	2,562	Lauderdale
Bells	1,643	Crockett
Maury City	782	Crockett
Gates	608	Lauderdale
Finger	279	McNairy

Table 2-2. Municipalities in the South Fork Forked Deer River Watershed. *Population based on 1990 census (Tennessee Blue Book). Asterisk (*) indicates county seat.*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The South Fork Forked Deer River Watershed, designated the Hydrologic Unit Code 08010205 by the USGS, is approximately 1,062 square miles and drains to the Forked Deer River.

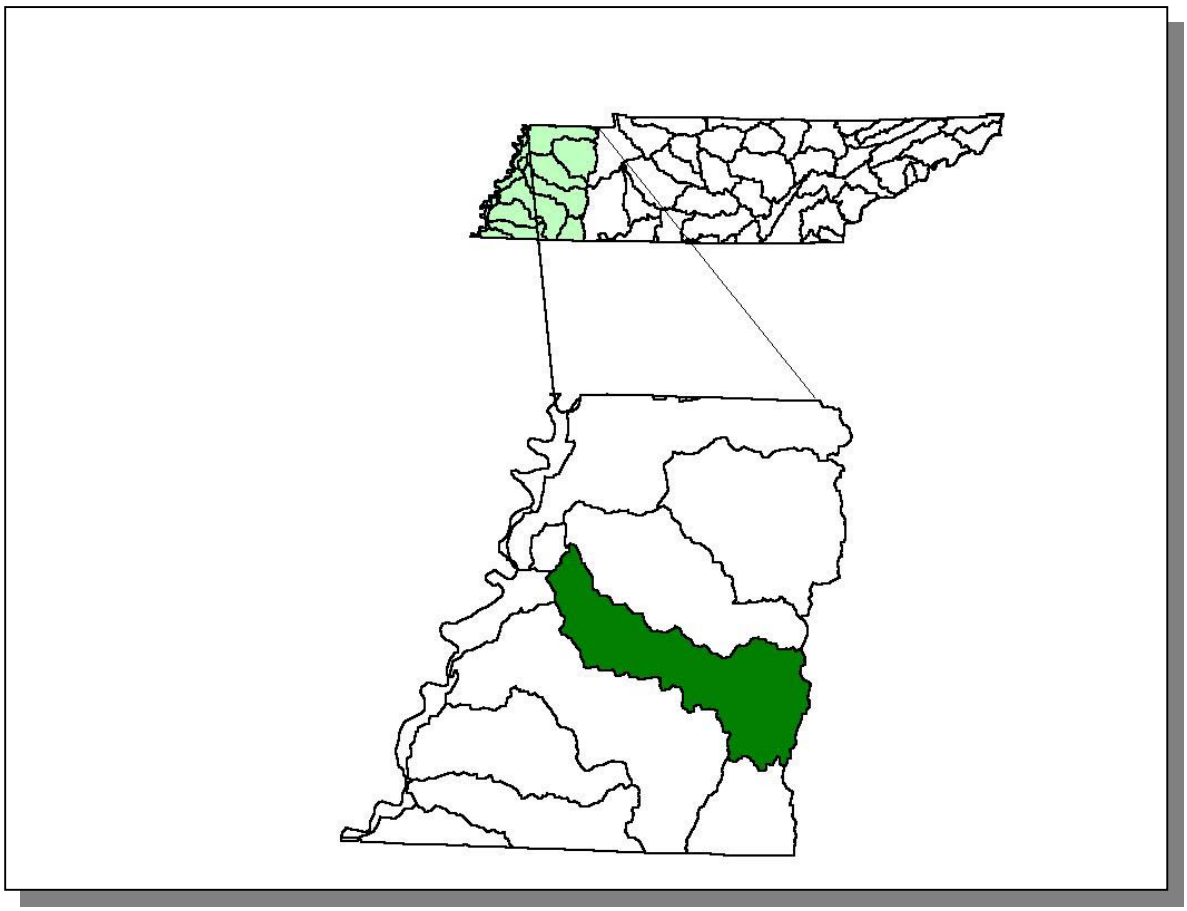

Figure 2-3. The South Fork Forked Deer River Watershed is Part of the Mississippi River Basin.

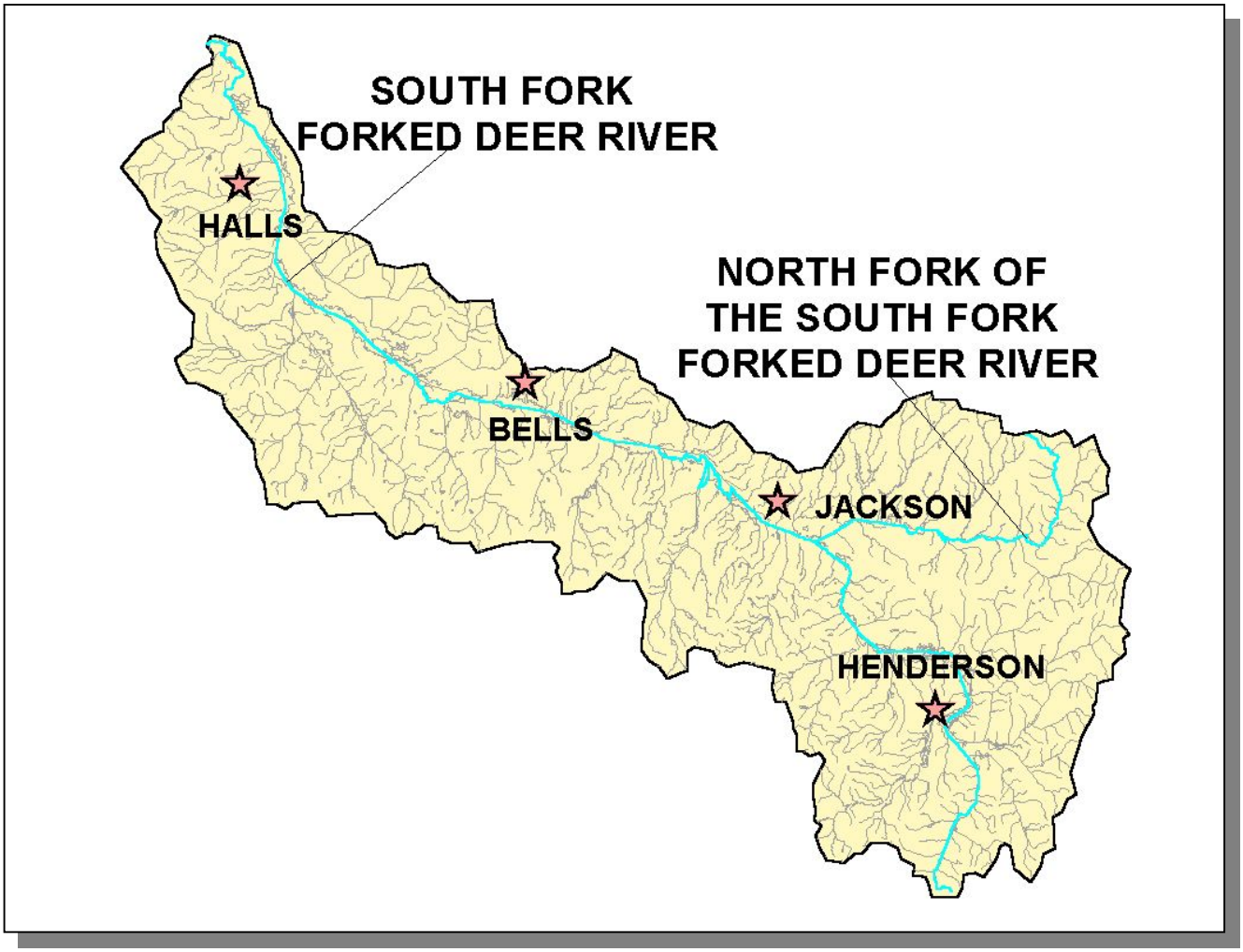

Figure 2-4. Hydrology in the South Fork Forked Deer River Watershed. *There are 1,771 stream miles and 570 lake acres recorded in River Reach File 3 in the South Fork Forked Deer River Watershed. Locations of South Fork Forked Deer River and North Fork of the South Fork Forked Deer River and the cities of Bells, Halls, Henderson, and Jackson are shown for reference.*

2.3.B. Dams. There are 57 dams inventoried by TDEC Division of Water Supply in the South Fork Forked Deer River Watershed. These dams either retain at least 30 acre-feet of water or have structures at least 20 feet high. Additional dams may be found in the watershed.

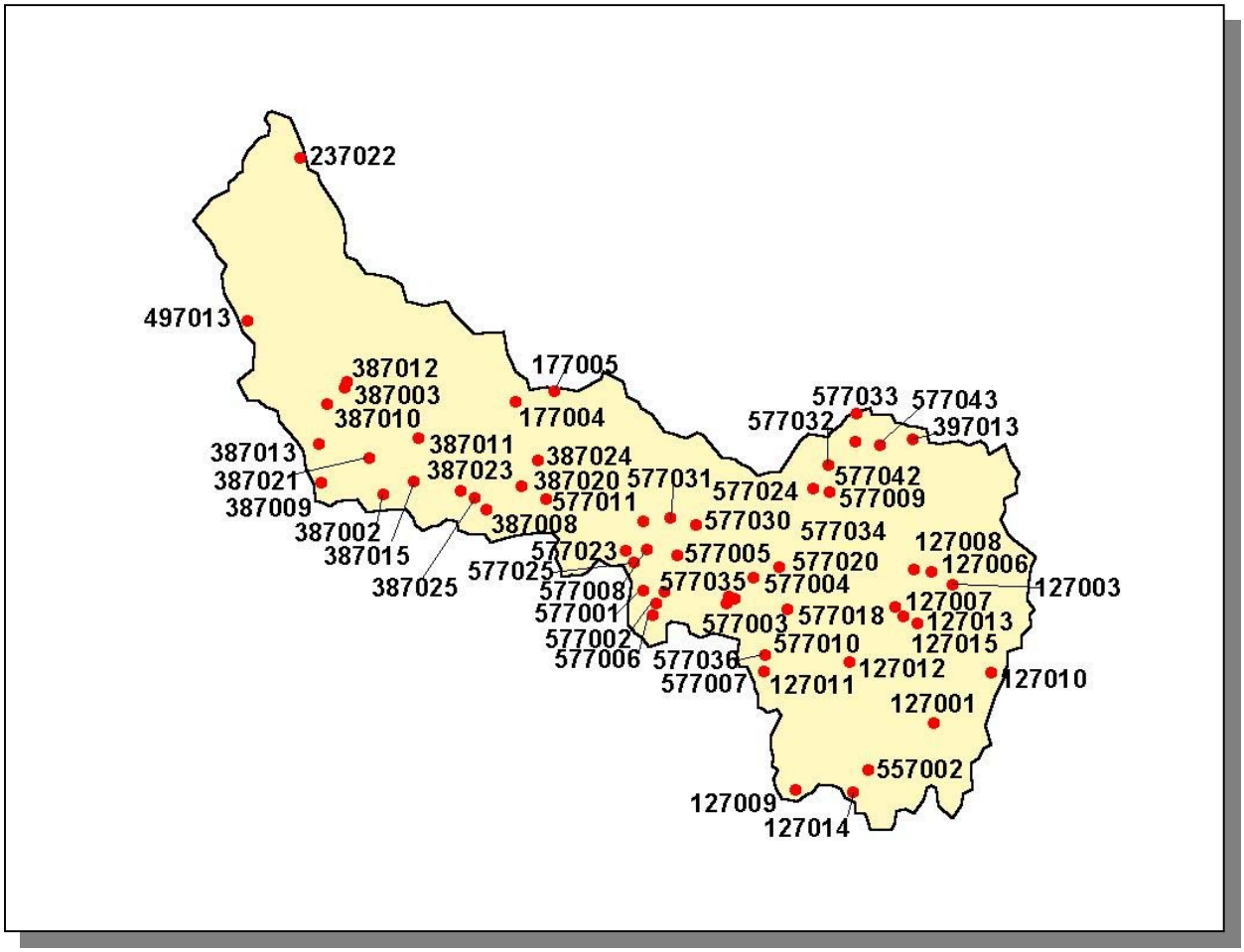

Figure 2-5. Location of Inventoried Dams in the South Fork Forked Deer River Watershed. *More information is provided in SFFD-Appendix II.*

2.4 LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

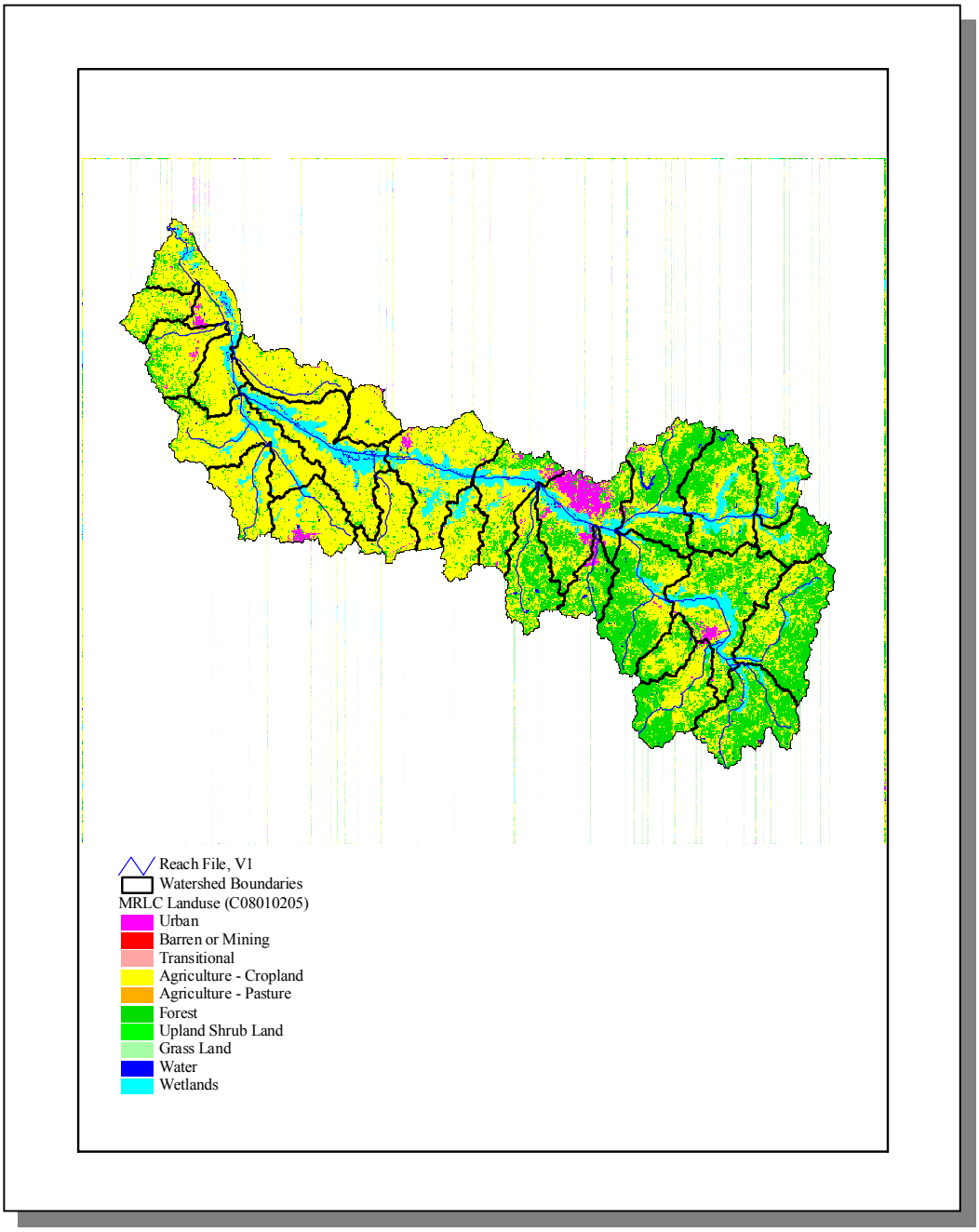

Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

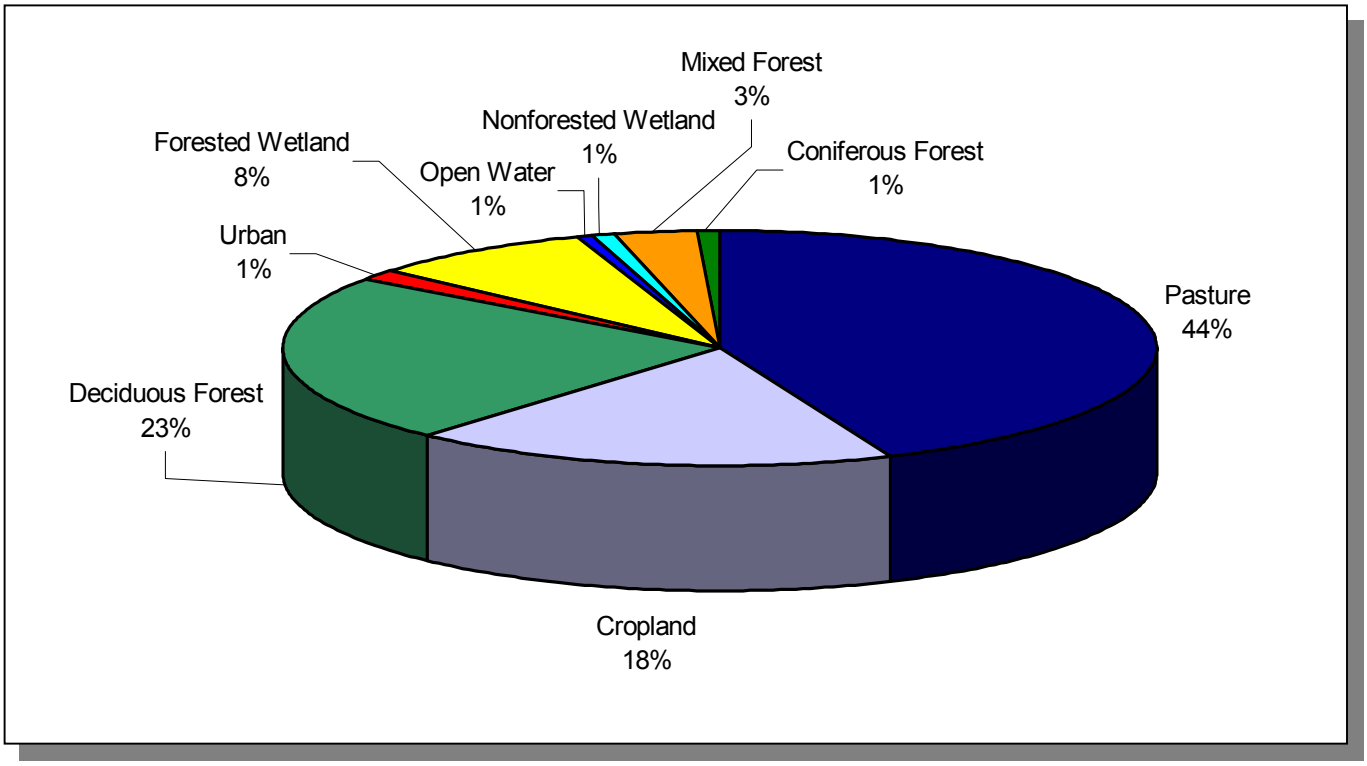

Figure 2-7. Land Use Distribution in the South Fork Forked Deer River Watershed. *More information is provided in SFFD-Appendix II.*

2.5 ECOREGIONS AND REFERENCE STREAMS. Ecoregions are defined as relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies include selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The South Fork Forked Deer River Watershed lies within 3 Level III ecoregions (Southwestern Plains, Mississippi Alluvial Plain, Mississippi Valley Loess Plains) and contains 4 Level IV subecoregions (Griffen, Omernik, Azavedo, 1997):

- The Southeastern Plains and Hills (65e) contain several north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, and Cretaceous-age fine sand, fossiliferous micaceous sand, and silty clays are to the east. With elevations reaching over 650 feet, and more rolling topography and more relief than the Loess Plains (74b) to the west, streams have increased gradient, generally sandy substrates, and distinctive faunal characteristics for west Tennessee. The natural vegetation type is oak-hickory forest, grading into oak-hickory-pine to the south.

- The Northern Mississippi Alluvial Plain (73a) within Tennessee is a relatively flat region of Quaternary alluvial deposits of sand, silt, clay, and gravel. It is bounded distinctly on the east by the Bluff Hills (74a), and on the west by the Mississippi River. Average elevations are 200-300 feet with little relief. Most of the region is in cropland, with some areas of deciduous forest. Soybeans, cotton, corn, sorghum, and vegetables are the main crops. The natural vegetation consists of Southern floodplain forest (oak, tupelo, bald cypress). The two main distinctions in the Tennessee portion of the ecoregion are between areas of loamy, silty, and sandy soils with better drainage, and areas of more clayey soils of poor drainage that may contain wooded swamp-land and oxbow lakes. Waterfowl, raptors, and migratory songbirds are relatively abundant in the region.

- The Bluff Hills (74a) consist of sand, clay, silt, and lignite, and are capped by loess greater than 60 feet deep. The disjunct region in Tennessee encompasses those thick loess areas that are generally the steepest, most dissected, and forested. The carved loess has a mosaic of microenvironments, including dry slopes and ridges, moist slopes, ravines, bottomland areas, and small cypress swamps. While oak-hickory is the general forest type, some of the undisturbed bluff vegetation is rich in mesophytes, such as beech and sugar maple, with similarities to hardwood forests of eastern Tennessee. Smaller streams of the Bluff Hills have localized reaches of increased gradient and small areas of gravel substrate that create aquatic habitats that are distinct from those of the Loess Plains (74b) to the east. Unique, isolated fish assemblages more typical of upland habitats can be found in these stream reaches. Gravels are also exposed in places at the base of the bluffs.

- The Loess Plains (74b) are gently rolling, irregular plains, 250-500 feet in elevation, with loess up to 50 feet thick. The region is a productive agricultural area of soybeans, cotton, corn, milo, and sorghum crops, along with livestock and poultry. Soil erosion can be a problem on the steeper, upland Alfisol soils; bottom soils are mostly silty Entisols. Oak-hickory and southern floodplain forests are the natural

vegetation types, although most of the forest cover has been removed for cropland. Some less-disturbed bottomland forest and cypress-gum swamp habitats still remain. Several large river systems with wide floodplains, the Obion, Forked Deer, Hatchie, Loosahatchie, and Wolf, cross the region. Streams are low-gradient and murky with silt and sand bottoms, and most have been channelized.

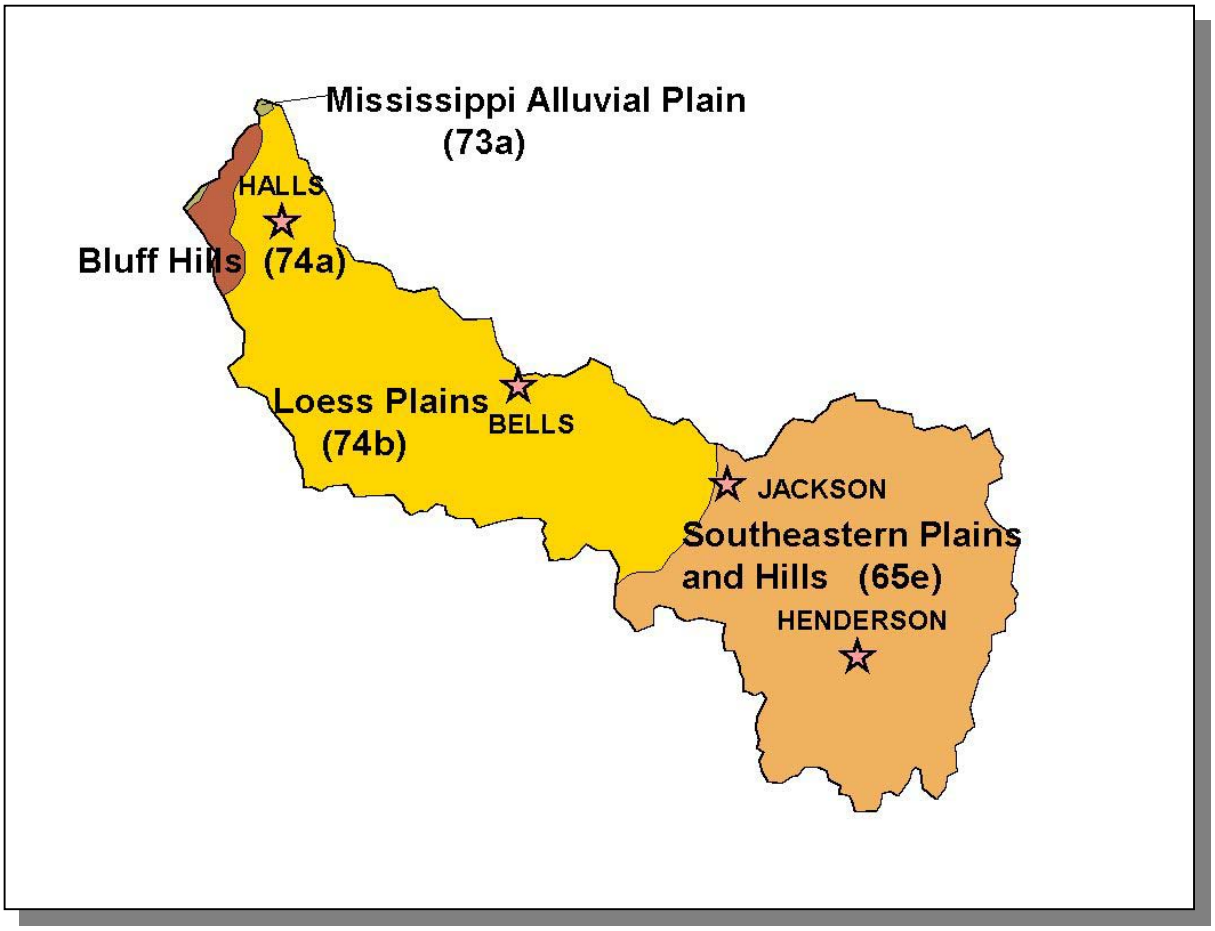

Figure 2-8. Level IV Ecoregions in the South Fork Forked Deer River Watershed. *Locations of Bells, Halls, Henderson, and Jackson are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

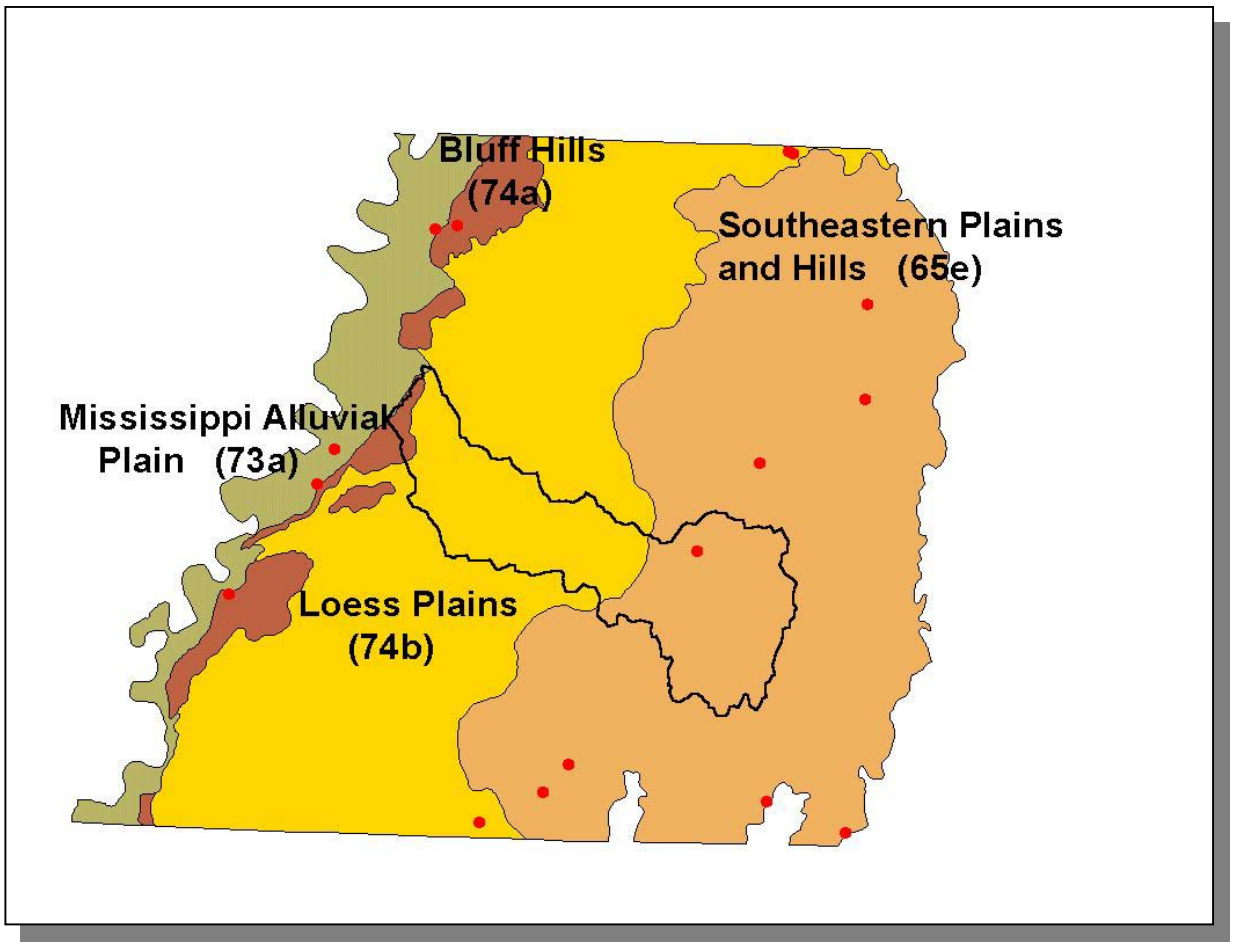

Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 65e, 73a, 74a, 74b. *The South Fork Forked Deer River Watershed is shown for reference. Additional information is provided in SFFD-Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the Federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	0
Insects	0
Mussels	0
Snails	0
Amphibians	1
Birds	6
Fish	1
Mammals	1
Reptiles	0
Plants	8
Total	**17**

Table 2-3. There are 17 Documented Rare Plant and Animal Species in the South Fork Forked Deer River Watershed. Additional rare plant and animal species may be present.

Additionally, in the South Fork Forked Deer River Watershed, there is one endangered fish species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Etheostoma pyrrhogaster	Firebelly darter		D

Table 2-4. Rare Aquatic Species in the South Fork Forked Deer River Watershed. *State Status: D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency.*

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at http://www.state.tn.us/environment/epo/wetlands/strategy.zip.

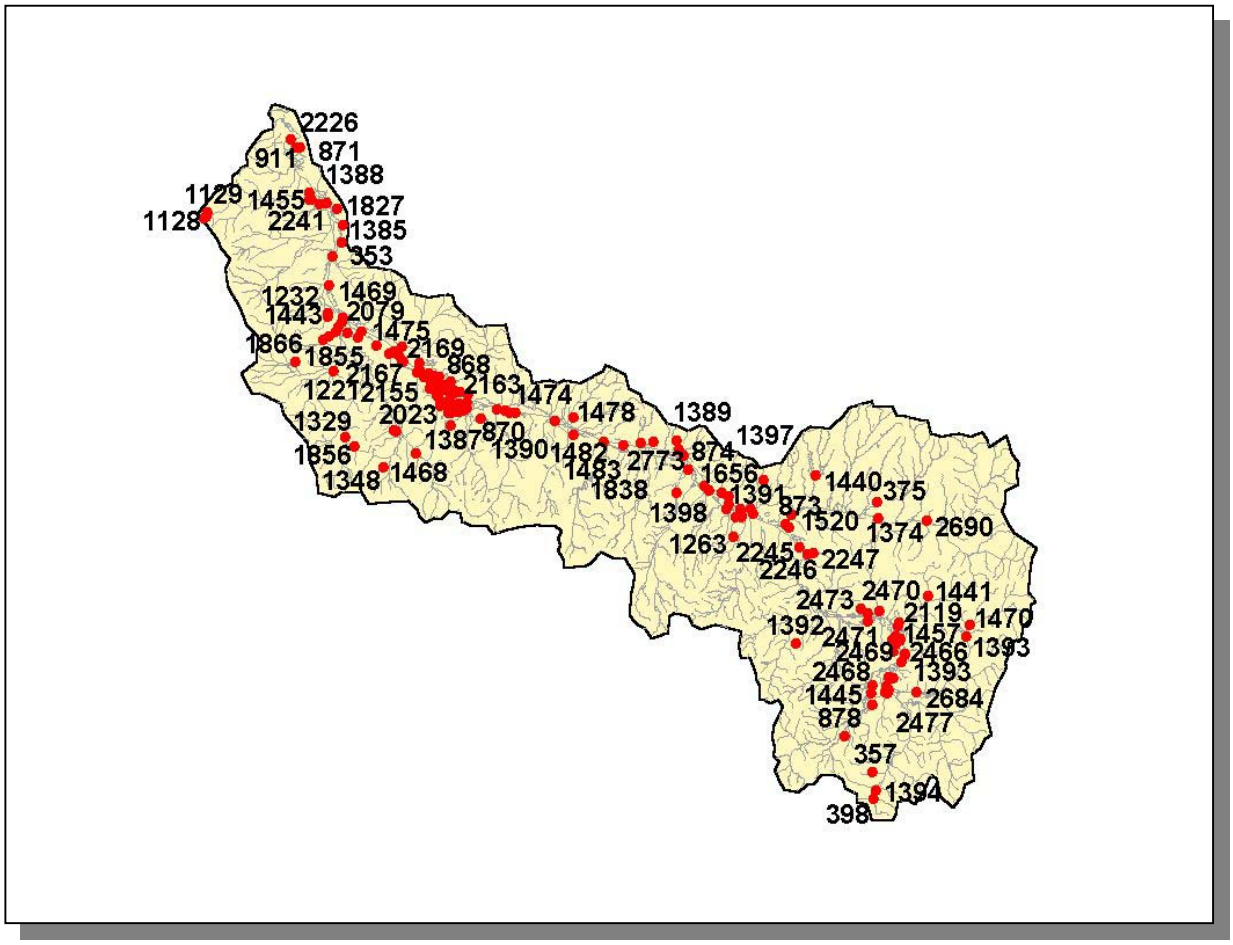

Figure 2-10. Location of Wetland Sites in TDEC Division of Natural Heritage Database in South Fork Forked Deer River Watershed. There may be additional wetland sites in the watershed. *Additional information is provided in SFFD-Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Interpretive Areas. Some sites representative of the cultural heritage are under state or federal protection:

- Shiloh Military Park, the scene of a Civil War battle
- Britton Lane Battlefield, includes a restored cabin which served as a Civil War hospital
- Pinson Mounds State Park and Archeological Mound, a complex that includes numerous Indian mounds and a museum

In addition, many local interpretive areas are common, most notably, Cypress Grove Nature Park and Tamarack Park in Jackson.

2.7.B. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages the Chickasaw State Forest jointly with the State Forestry Division.

Figure 2-11. Chickasaw State Forest in the South Fork Forked Deer River Watershed. *Locations of Bells, Halls, Henderson, and Jackson are shown for reference.*

2.8. TENNESSEE RIVERS ASSESSMENT PROJECT. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers

Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/riv

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Allen Creek	2			Marlin Creek	4		
Bear Creek	2			Melton Branch Sugar Creek	4		
Black Creek	4			Meridian Creek (South Fork Forked Deer)	3	4	
Bond Creek	4			Meridian Creek (Nixon Creek Canal)	4		
Briar Creek	4			Middle Fork Creek	4		
Brown Creek	4			Mill Creek	3		
Bushel Branch Huggins Creek	3			Mud Creek	4		
Cane Creek	4			Nixon Creek Canal	4	3	
Clarks Creek	3,4		2,4	North Fork of South Fork Forked Deer River	2	2	2
Connley Creek	4			Otter Creek	4		
Cotton Grove Creek	3			Panther Creek	4		
Cub Creek	4			Pond Creek	4		
Cypress Creek	3			Right Fork Sweet Lips Creek	3		
Dry Creek	4			South Fork Forked Deer River	3,4	2,3	
Finger Creek	3			Spencer Creek	3		
Harris Creek	3			Spring Creek	3		
Huggins Creek	3		2	Sugar Creek	4		
Jacks Creek	3,4		2	Sweet Lips Creek	3		
Jacobs Creek	4			Tar Creek	4		
Johnson Creek	4			Turkey Creek	3		
Jones Creek	3			Tributary to Meridian Creek	4		
Kail Creek	4			Tributary to Jacks Creek	4		
Little Sugar Creek	3			Whitson Creek	4		
Lost Creek	4						

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed as a fishery